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ABSTRACT TITLE:

Deliniation of the Arctic Ocean Perennial Ice Zone Using NSCAT and SeaWinds Observations

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ABSTRACT TEXT:

Text block boundaries are fixed. Abstract cannot exceed boundaries.

Recently, we have used NSCAT, RADARSAT and ice motion data to examine the perennial ice zone (PIZ) of the Arctic Ocean (Kwok et al., 1999) between October 1996 and April 1997. The PIZ is identified using a simple backscatter-based classification of the gridded NSCAT backscatter fields. The area of the PIZ at the beginning of October occupies an area of 5.32 x 10^6 km^2, approximately 76% of the Arctic Ocean ice cover. By the first of May, only 4.54 x 10^6 km^2 of that area remains, a decrease of 0.78 x 10^6 km^2 over the 7-month period. This area loss can be explained almost entirely by ice export. Over this period, the total area flux of sea ice through Fram Strait, estimated using satellite passive microwave motion, is 0.80 x 10^6 km^2 or 12% of the Arctic Ocean. Approximately 0.70 x 10^6 km^2 or 88% of the exported area is from the PIZ. Nares Strait outflow is small at 34,000 km^2. After accounting for the outflow through the Fram and Nares Straits, an unexplained residual of 46,000 km^2 remains. We attribute this residual to errors in our estimation process, the unaccounted for ice flux through the Canadian Archipelago, and the net divergence and convergence within the PIZ over the period. Here, we will compare the results from NSCAT with the area of the PIZ obtained from SeaWinds for the period of October 1999 through March 2000. The same procedures will be used to validate the efficacy of our approach to retrieve the PIZ area from SeaWinds data.

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